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# **EUROPEAN PATENT APPLICATION**

⑲ Application number: 87308484.2

⑤① Int. Cl. 4: **C12N 15/00** , **C12N 5/00** ,  
**C12P 21/02**

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⑤④ Plasmid containing an eucaryotic secretory signal sequence and process for secreting encoded proteins.

⑤⑦ A synthetic gene encoding an exogenous protein has been assembled and inserted into a eucaryotic secretion expression vector containing the cytomegalovirus immediate early (CMV-IE) transcriptional regulatory region, any one of a variety of mammalian secretory signal peptides and a portion of the bovine growth hormone gene encoding transcription termination sequences. The recombinant plasmid encodes the amino acid for the fusion protein that contains the mammalian secretory signal peptide and the amino acids of the protein to be secreted. This plasmid, when transiently introduced into cultured mammalian fibroblasts, directs the synthesis of the fusion protein, the subsequent proteolytic removal of the secretory signal peptide and the secretion of the protein into the culture media. The recombinant proteins produced by these cells are biologically active.

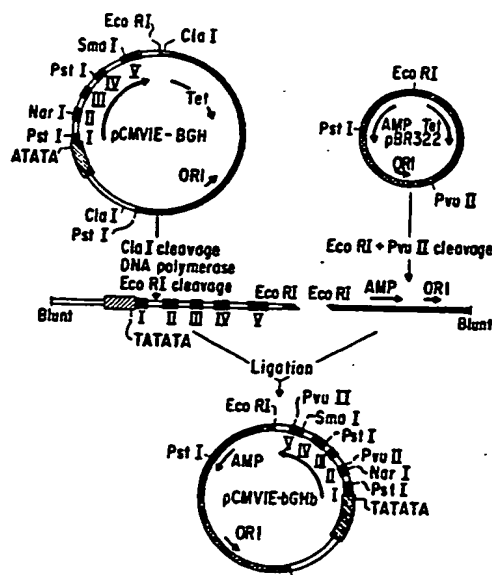


FIG. 1



EP 87 30 8484

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	EP-A-0 173 552 (THE UPJOHN CO.) * Pages 7-10 * --	1-9	C 12 N 15/00 C 12 N 5/00 C 12 P 21/02
A	BASIC LIFE SCIENCES, vol. 37, July 1986, pages 19-37 J.J. KOPCHICK et al.: "Expression of the bovine growth hormone gene in cultured rodent cells" * Whole article; especially: page 34, paragraphs 1,2 * --	1-9	
A	EP-A-0 128 733 (GENENTECH INC.) * Figure 12, underscored part * --	10	
A	NUCLEIC ACID RESEARCH, vol. 13, no. 6, March 1985, pages 1923-1938; IRL Press Ltd, Oxford, GB G. BUELL et al.: "Optimizing the expression in Escherichia coli of a synthetic gene encoding somatostatin-C (IGF-I)" * Figure 1 * --	10	TECHNICAL FIELDS SEARCHED (Int. Cl. 4) C 12 N C 12 P
A	EP-A-0 135 094 (AMGEN) * Table II * --	10	
P,X	PROC. NATL. ACAD. SCI. USA, vol. 84, no. 9, May 1987, pages 2638-2642; US M.L. BAYNE et al.: "Expression of a synthetic gene encoding human insulin-like growth factor I in cultured mouse fibroblasts" * Whole article *	1-10	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07-04-1989	Examiner CUPIDO
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



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## CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.
- namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

## X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely:

1. Claims 1-9: An expression/secretion plasmid
2. Claim 10: The human insulin-like growth factor I gene

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
- namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.
- namely claims:

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